

CLAIMS

What is Claimed is:

1. A data storage device based on a magnetic recording medium, comprising:
a magnetic head for reading magnetic information recorded on said magnetic recording medium and acquiring a read signal;
a data read means for converting said read signal read by said magnetic head into desired data in synchronism with a read clock signal; and
a read clock control means for controlling the phase of said read clock signal in accordance with the phase of said read signal read by said magnetic head.
2. The data storage device according to claim 1, wherein said read clock control means comprises an oscillation means for generating said read clock signal and a correction means for controlling said oscillation means in such a manner as to recognize the phase difference between the read clock signal generated by said oscillation means and said read signal and adjust the phase of the read clock signal for the phase of the read signal.
3. The data storage device according to claim 1, wherein said data read means and said read clock control means are furnished as the functions of a read/write channel.
4. The data storage device according to claim 1, further comprising:
a storage means for storing the information about the phase of said read signal;
wherein said read clock control means corrects the phase of said read clock signal in accordance with the information about the phase of said read signal, which is stored in said storage means, if the phase difference between said read signal and said read clock signal is greater than predefined.

5. The data storage device according to claim 4, wherein said storage means is a register provided for the read/write channel.

6. The data storage device according to claim 4, wherein said storage means is a memory provided for a hard disk controller.

7. The data storage device according to claim 1, wherein, if data is not successfully read due to a phase difference between said read clock signal and said read signal, said data read means sets a window at a position at which the data has not been successfully read, and wherein the read clock signal whose phase is controlled by said read clock control means is used within the window to read the data again.

8. The data storage device according to claim 1, wherein, if data is not successfully read due to a phase difference between said read clock signal and said read signal, said data read means uses the read clock signal whose phase is controlled by said read clock control means to perform a data read again at a position at which the data has not been successfully read.

9. A correction mechanism for correcting the operation performed in a process for reading data written on a predefined recording medium, the correction mechanism comprising:

a phase detector for detecting the phase of a read signal which is obtained by reading the information recorded on said recording medium;

an oscillator for generating a read control signal which converts said read signal into desired data; and

a phase corrector for controlling said oscillator in accordance with the phase of said read signal, which is detected by said phase detector, in order to correct the phase of the read control signal generated by said oscillator.

10. The correction mechanism according to claim 9, wherein said phase corrector compares the phase of said read signal, which is detected by said phase detector, against the phase of said read control signal, which is generated by said oscillator, and shifts the phase of the read control signal until it coincides with the phase of the read signal.

11. The correction mechanism according to claim 9, further comprising:
a register for storing the information about the phase of said read signal which is detected by said phase detector;

wherein, if the phase difference between said read signal and said read control signal generated by said oscillator is greater than predefined, said phase corrector corrects the phase of the read control signal in accordance with the information about the phase of said read signal which is stored in said register.

12. The correction mechanism according to claim 9, wherein said phase detector, said oscillator, and said phase corrector form a control loop for exercising feedback control over the read control signal during a data read process.

13. A data read control method for reading data written on a predefined recording medium, comprising the steps of:

acquiring a read signal of information recorded on said recording medium;
converting said read signal into desired data in synchronism with a read clock signal; and

making corrections, if data is not successfully read due to a phase difference between said read clock signal and said read signal, to adjust the phase of the read clock signal for the phase of the read signal.

14. The data read control method according to claim 13, further comprising the step of setting a window at a position at which said data has not been successfully read, and converting said read signal in the window to data again by using, within the window, said read clock signal whose phase is corrected.

15. The data read control method according to claim 13, wherein the step of converting said read signal to desired data converts, after the phase of said read clock signal is corrected, the read signal at a read failure position to data by using the read clock signal whose phase is corrected.